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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,473	07/11/2003	Xiaowei Deng	TI-33969	5307

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EXAMINER
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NGUYEN, VAN THU T

ART UNIT	PAPER NUMBER
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2824

DATE MAILED: 05/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

10/618,473

Applicant(s)

DENG ET AL

Examiner

VanThu Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 4/18/06 for RCE and 3/22/06 for A.F.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-25 is/are pending in the application.
- 4a) Of the above claim(s) 19-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 6, 7, 9, 11, 12, 14, 16-18 and 23-25 is/are rejected.
- 7) ☒ Claim(s) 3, 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This Office Action is in response to RCE filed on April 18, 2006 and Amendment filed on March 22, 2006.
2. Claims 1-9, 11-25.
3. Claims 1-9, 11-18, 23-25 are present for examination.
4. Claim 10 was previously cancelled.
5. Claims 19-22 are withdrawn from further consideration.
6. The indicated allowability of claims 1-2, 4, 6, 9, 15, 23, and 25 are withdrawn in view of the newly discovered reference(s) to McLaury. Rejections based on the newly cited reference(s) follow.

### ***Response to Arguments***

7. Applicant's arguments, filed on December 5, 2005, with respect to the rejection(s) of claim 11 under 35 U.S.C. 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of McLaury.

### ***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
9. Claims 5, 8, 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Limitations in claim 5 are conflicted with limitations in claim 1, lines 9-10. How is it possible to have the circuitry for operating the row of memory cells (or driver circuit) preceding the intervention circuit as claimed in claim 1, and then later being in between the intervention circuit and the word line as claimed in claim 5.

Limitations in claim 15 are conflicted with limitations in claim 11, line 6 with the same reason as set forth above.

Limitations in claim 8 are conflicted with limitations in claim 1, lines 11-13. How is it possible to have the intervention circuit and the circuitry for operating the row of memory cells being controlled by different signal sources as claimed in claim 1 and then later being controlled by same signal source as claimed in claim 8.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-2, 4, 6-7, 9, 11-12, 14, 16-18, 25 are rejected under 35 U.S.C. 102(b) as being anticipated by McLaury (U.S. Patent No. 5,926,433).

**Regarding claim 1**, McLaury discloses a method of reducing power consumption in a semiconductor memory device (see column 5, lines 54-57) having a row of memory cells (e.g. 7A, see FIG. 2) and circuitry for operating the row of memory cells (e.g. driver circuit 25A), the method comprising the steps of:

providing an intervention circuit (transistor 30A, see FIG. 3);

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instantiating the intervention circuit within the circuit for operating the row of memory cells, proximal to the row of memory cells (see how transistor 30A is arranged in FIG. 3);

operating the intervention circuit to retain the row of memory cells in a desired state (word line reset state); and

power down, with a power switch, the circuitry for operating the row of memory cells preceding the intervention circuit (power down driver circuit 25A with signal TDI\* generated by level translator 50, see FIG. 3);

wherein the intervention circuit is operated by a first signal source (e.g. secondary decoder circuit 20, see FIG. 3), separate from the second signal source (e.g. primary decoder circuitry 5 and level translator 50, see FIG. 3) that powers down the circuitry for operating the row of memory cells preceding the intervention circuit.

**Regarding claim 2**, McLaury discloses element 7A is a word line, and element 25A is a driver circuitry.

**Regarding claim 4**, McLaury discloses element 30A is a transistor.

**Regarding claim 6**, McLaury discloses the intervention circuit is instantiated between the word line and driver circuitry (see how transistor 30A is arranged in FIG. 3).

**Regarding claim 7**, McLaury discloses wherein the steps of operating the intervention circuit and powering down the circuit for operating the row of memory cells preceding the intervention circuit are not performed concurrently (signal TDI\* controlling driver 25A and PHI\* controlling transistor 30A do not performed concurrently, see TDI\* and PHI\* timing diagrams in FIG. 4).

**Regarding claim 9**, McLaury discloses wherein a nominal delay follows the step of operating the intervention circuit before powering down the circuitry for operating the row of memory cells preceding the intervention circuit is performed (there's a delay between timing signals TDI\* and PHI\*, see FIG. 4)

**Regarding claim 11**, McLaury discloses a semiconductor device comprising:

a row of memory cells (e.g. row of memory cells connected to word line 7A, see FIG. 2);

a control circuitry preceding the row of memory cells (driver circuit 25A, see FIG. 3); and

an intervention circuit, instantiated within the control circuitry proximal to the row of memory cells, adapted to hold the row of memory cells at a desired state while control circuitry preceding the intervention circuit is powered down with a power switch having a control signal input (transistor 30A is between the driver circuit 25A and word line 7A. When word line 7A is reset, driver circuit 25A is powered down with inverter 55, and transistor 30A turns on to hold word line 7A at Vneg).

**Regarding claims 12, 14, 16**, see rejections applied to claims 2, 4, 6 above.

**Regarding claim 17**, McLaury discloses wherein the intervention circuit is coupled to a first assertion signal source that is also coupled to the driver circuitry (e.g. signal RAS coupled to both transistor 30A via secondary decode circuit 20 and driver circuit 25A via primary decoder circuitry 5 and level translator 50, see FIG. 3).

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**Regarding claim 18**, McLaury discloses wherein the intervention circuit is coupled to a first assertion signal source (e.g. PHI\*, see FIG. 3), and a second assertion signal source (e.g. signal TDI\*, see FIG. 3) is coupled to the driver circuitry.

**Regarding claim 25**, McLaury inherent discloses the control signal input is a sleep mode control signal. It is obvious to one with ordinary skill in the art to realize that the state of RAS signal is directly related to the memory device being in active mode or sleep mode (see U.S. Patent No. 5,808,955 to Hwang et al., column 5 lines 38-40 for example)

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over McLaury in view of Inaba (U.S. Patent No. 6,906,979).

McLaury discloses, as applied in prior rejection of claims 1 and 11, all claimed subject matter except the control circuitry comprising a word line pre-driver circuit.

**Regarding claims 23-24**, FIG. 2 of Inaba discloses, a memory device comprising a plurality of memory blocks; FIG. 3 of Inaba discloses a main-word-drive-line driver circuit 31 is arranged in the region 28 shown in FIG. 2, and a sub-word-drive-line driver circuit 32 is arranged in the sub-cross region 26 shown in FIG. 2.

Since McLaury and Inaba are both from the same field of endeavor, the purpose disclosed by Inaba would have been recognized in the pertinent art of McLaury.

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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the concept of word line driver disclosed in McLaury for the main word line driver disclosed in Inaba for the purpose of reducing power consumption (see McLaury, column 5, lines 54-57).

***Allowable Subject Matter***

14. Claims 3, 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art made of record and considered pertinent to the applicant's disclosure does not teach or suggest the claimed limitations. McLaury and Inaba, taken individually or in combination, do not teach the claimed invention having the following limitations, in combination with the remaining claimed limitations: wherein the intervention circuit comprises a resistor (as in claims 3 and 13).

***Conclusion***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to VanThu Nguyen whose telephone number is (571) 272-1881. The examiner can normally be reached on Monday-Friday, 9:00am-5:30pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

May 19, 2006

  
VanThu Nguyen  
Primary Examiner  
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